

Route 3/NH 28 Hooksett 29611 Roadway Improvement Project

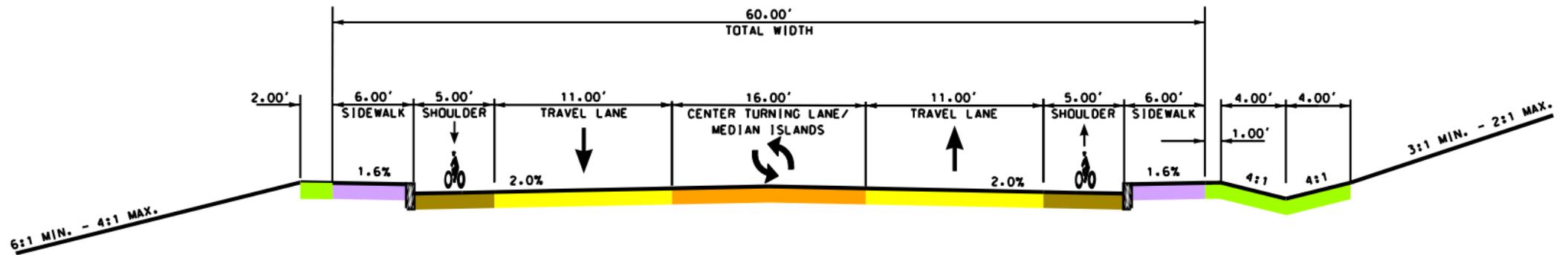
- Working Group Meeting #4
- Oct 18, 2021
- 10:00 AM – 11:30 AM



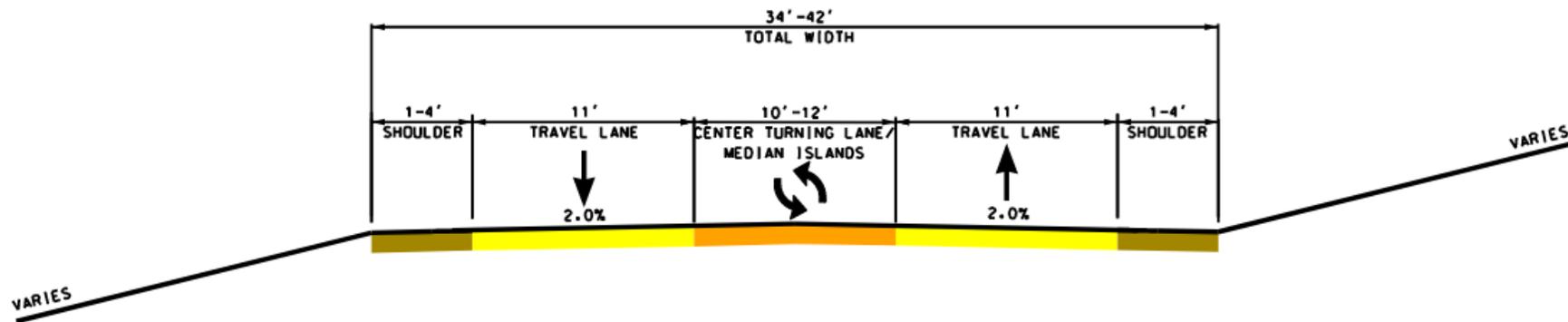
Meeting Agenda

1. Overview of 3-lane alternative on Route 3 and its associated impacts
2. Alice Ave intersection
3. Mammoth Rd intersection
 - a) Signalized intersection
 - b) Roundabout
4. Martins Ferry Rd intersection
5. Alternative comparison 5-lane vs. 3-lane
6. Feedback from working group
7. Next Steps

Route 3 typical section (3-lane alternative)



**PROPOSED 3-LANE TYPICAL SECTION
ROUTE 3**



**EXISTING TYPICAL SECTION
ROUTE 3**

Route 3 design methodology (3-lane alternative)

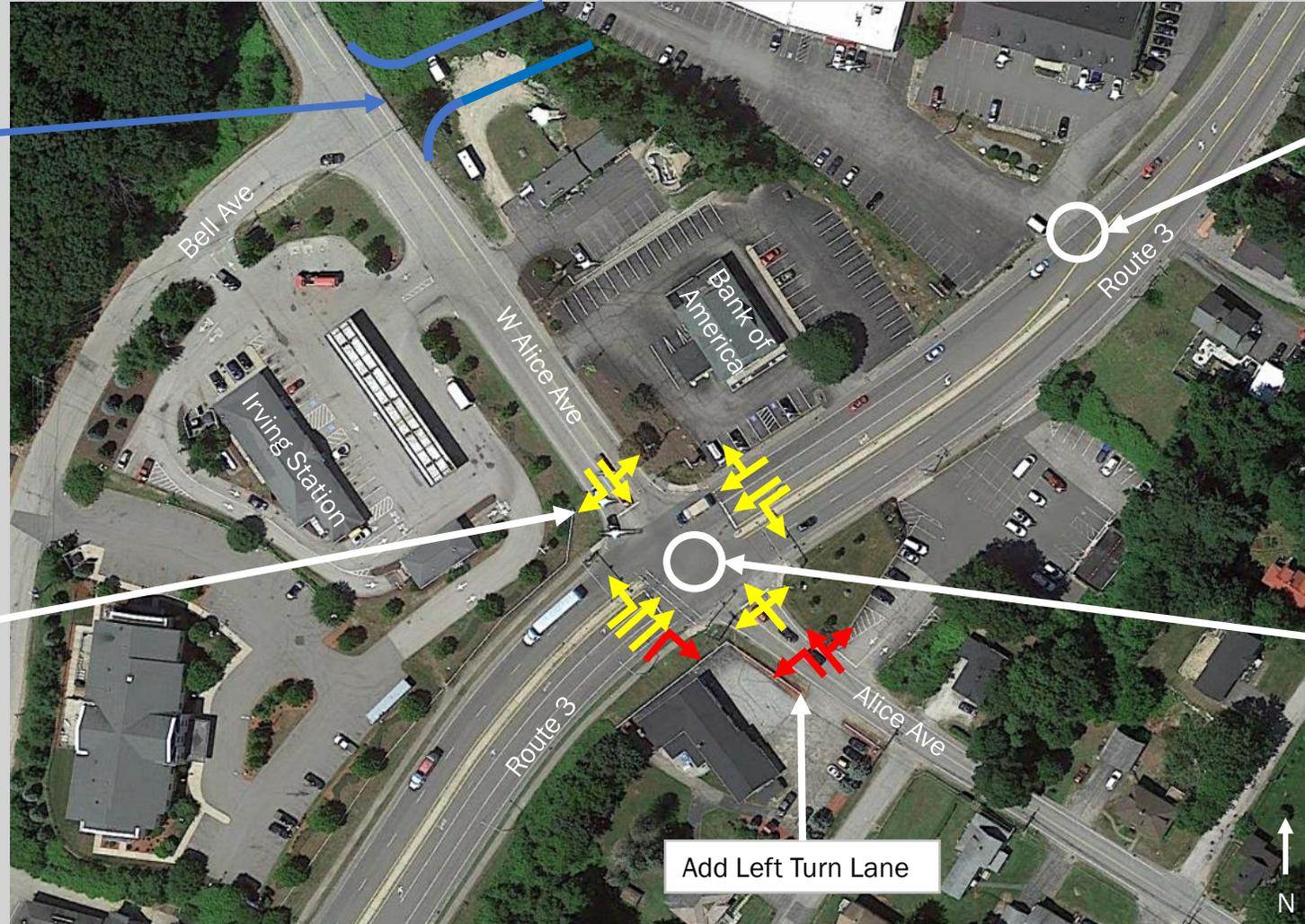
- Maintained the same intersection design as the 5-lane alternative
- Applied the 3-lane typical section to the existing roadway centerline between the signalized intersections
- *Shifted existing alignment from Carrington Farms to White Hall Rd, minimizing need for permanent ROW acquisition*
- Used continuous sidewalks on both sides of Rte 3
- Reviewed associated impacts and selected the ones that are more significant for presentation to the WG

Route 3 summary of concerns (3-lane alternative)

- 13 +/- parking spaces lost at Chantilly restaurant; possibility to reconfigure parking lot
- Similar to 5-lane, significant impacts from Embassy Ave to Mammoth Rd due to narrow width between abutting properties
- Existing parking impacted at Pro Technologies (former Mill City Flooring) north of Cinemagic drive;
potential for shifting the alignment further east to mitigate impact which would result in additional ledge removal, National Guard impact, extension of existing culvert
- Approx. 650 LF of retaining walls could be used to limit property impacts

Traffic Suggestions Alice Ave

Consider extending Bell Ave to provide alternative access to commercial property



Reconfigure US3 southbound to improve lane use at signal and drive access

Consider access management strategies to address safety issues from Alice Ave to Mammoth Rd

Optimize Signal Timing

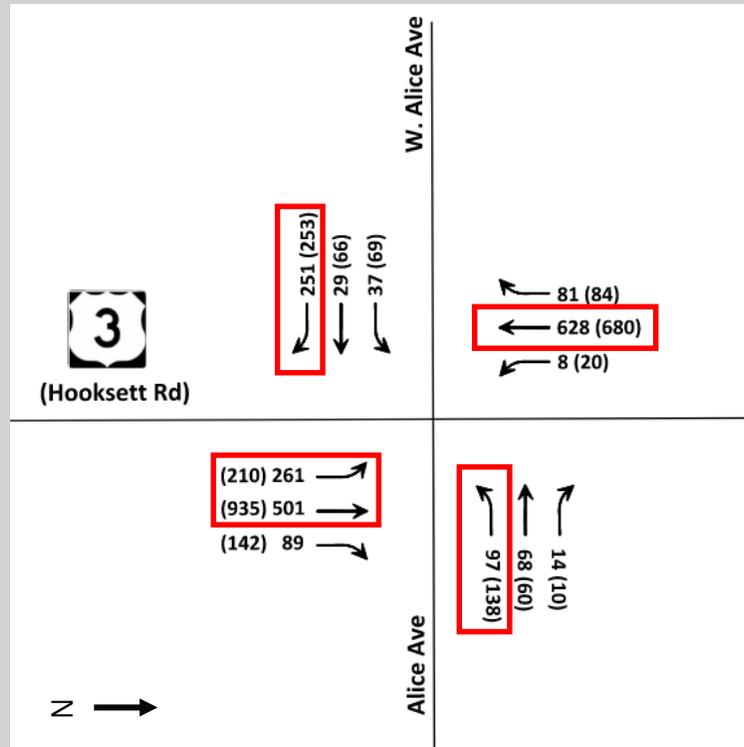
LEGEND:
Yellow = Existing lane configuration
Red = Suggested lane modification

Add Left Turn Lane

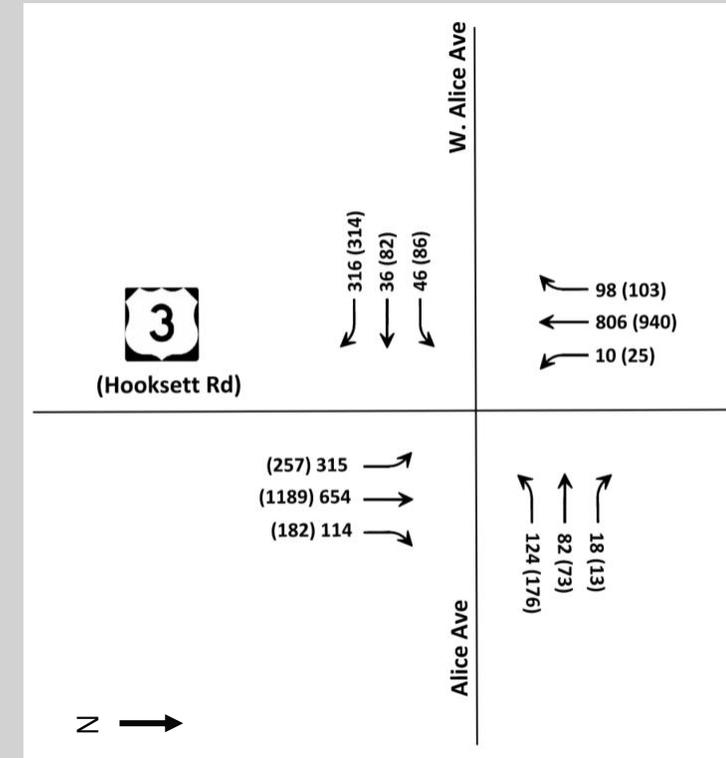
Traffic Volumes – Alice Ave

- Traffic counts completed September 2020
- Existing traffic volumes have been adjusted to account for COVID/SNHU online classes
- Existing conditions traffic model developed January 2021

 The red boxes highlight the predominant traffic movements

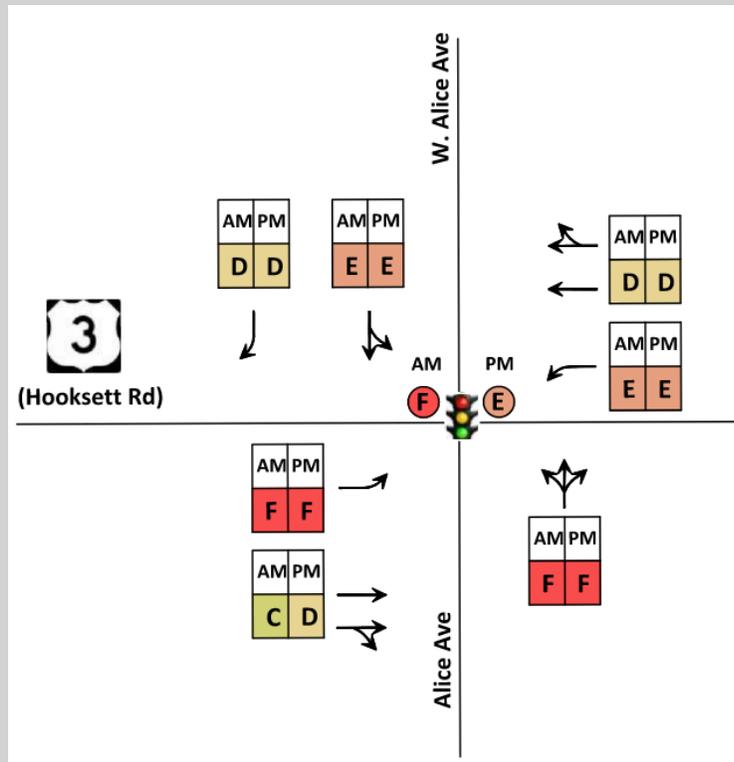


Existing Hourly Volumes
AM (PM)

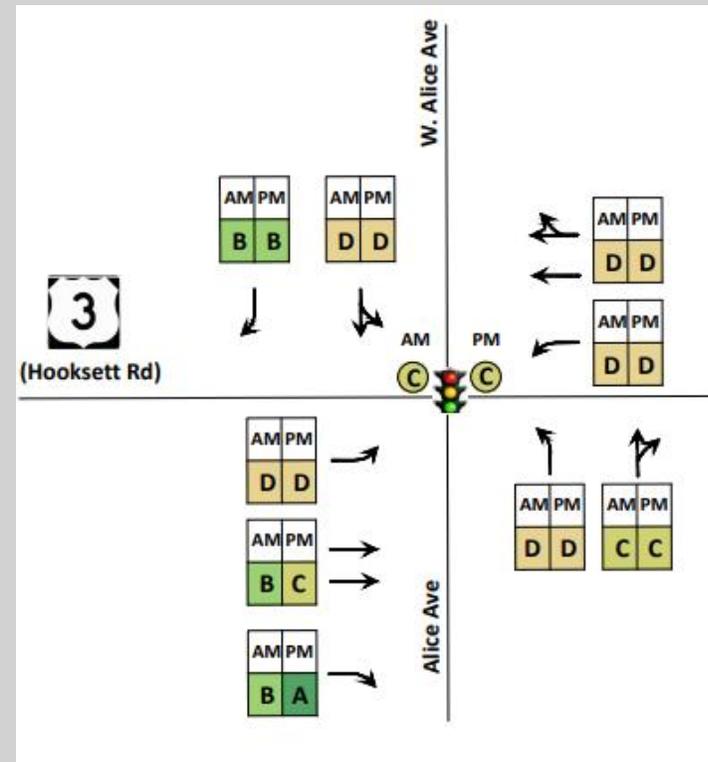


Projected Hourly Volumes (2045)
AM (PM)

Level of Service (LOS) – Alice Ave



Existing LOS (2020)



Projected LOS (2045) – w intersection modifications

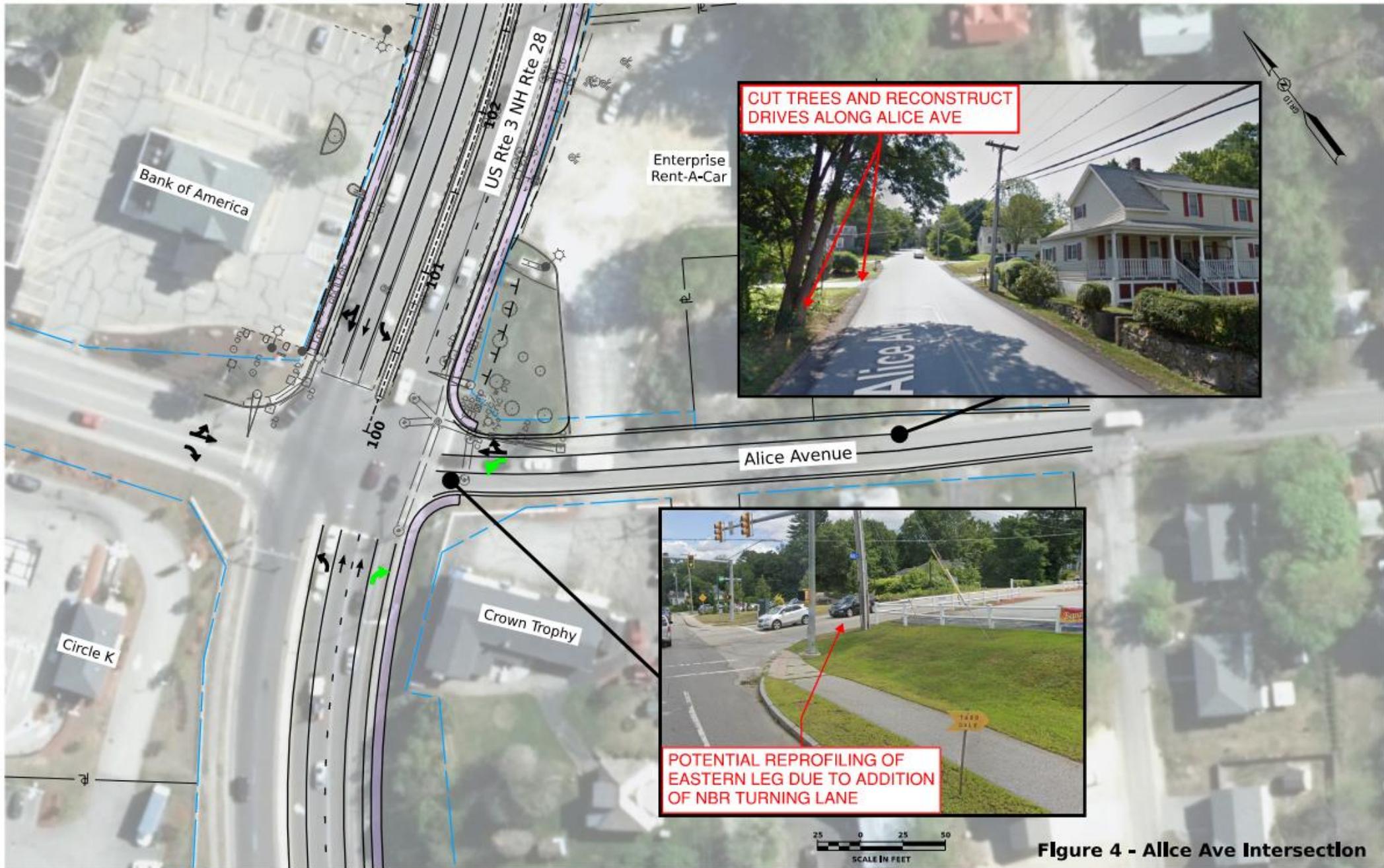
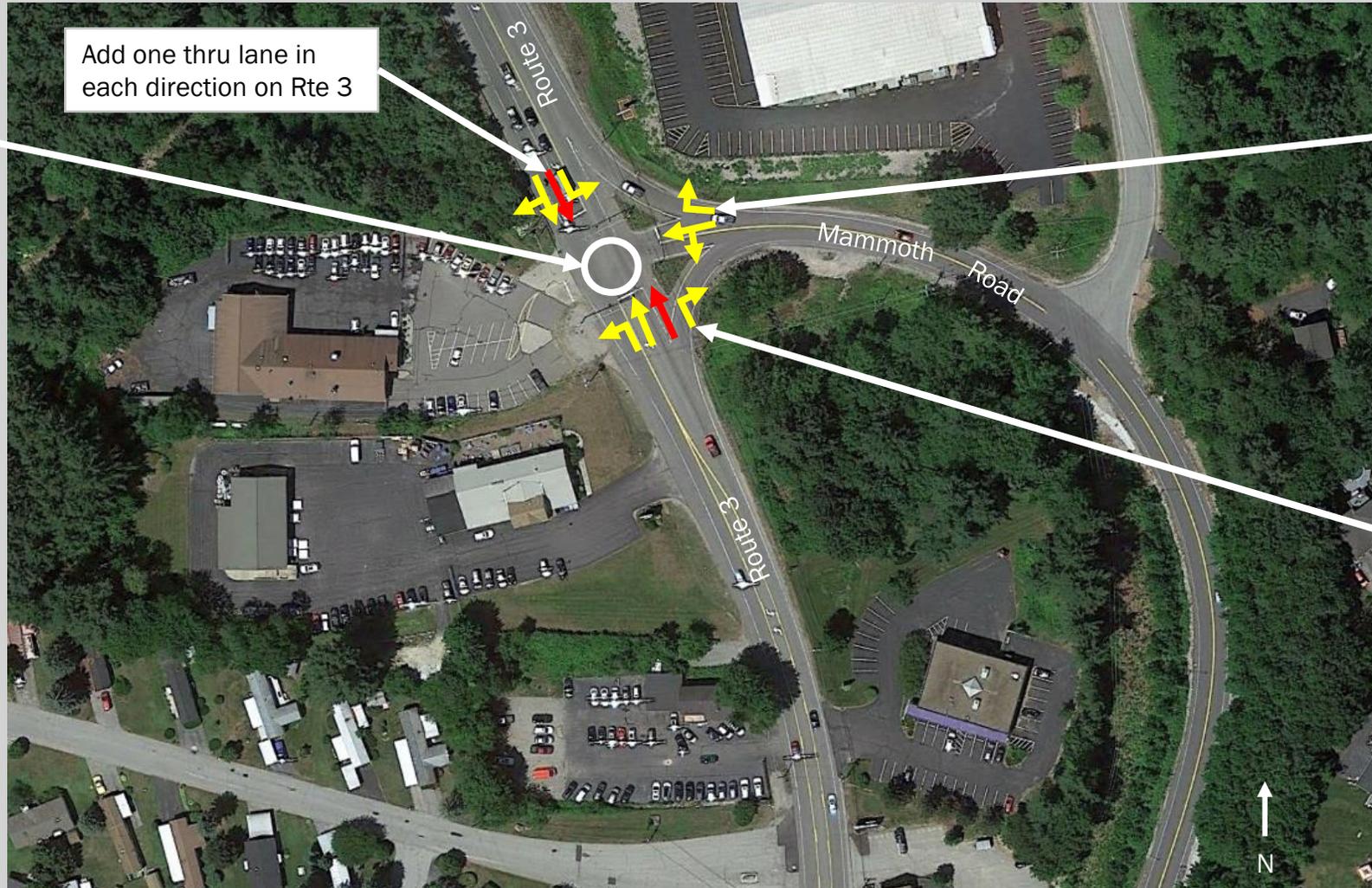


Figure 4 - Alice Ave Intersection

Traffic Suggestions Mammoth Rd



Optimize Signal Timing

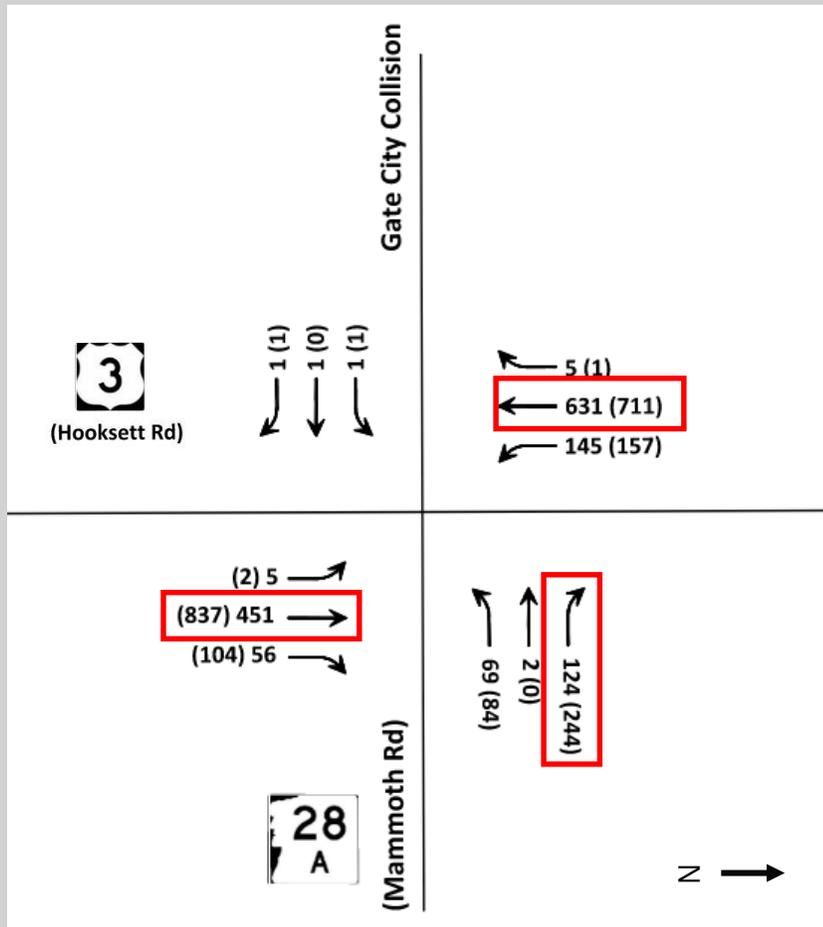
Add one thru lane in each direction on Rte 3

Increase RT lane storage

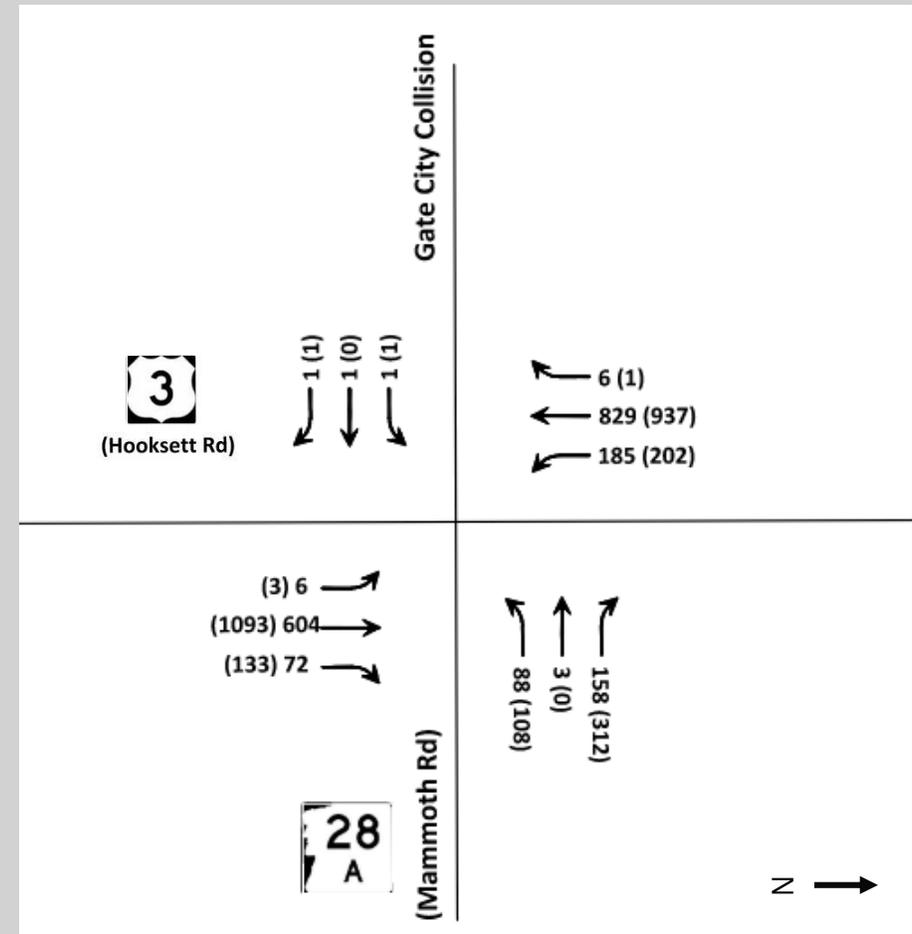
Increase RT lane storage

LEGEND:
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Traffic Volumes - Mammoth Rd



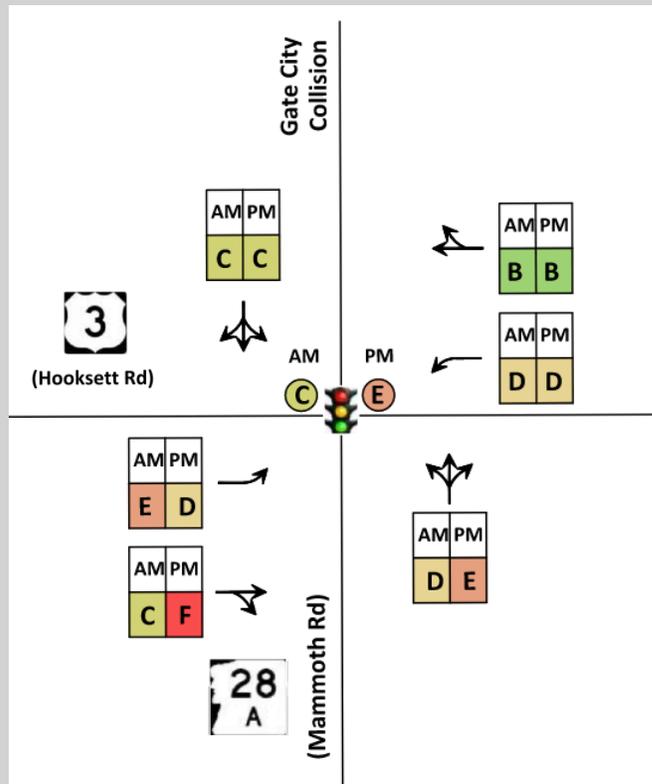
Existing Hourly Volumes
AM (PM)



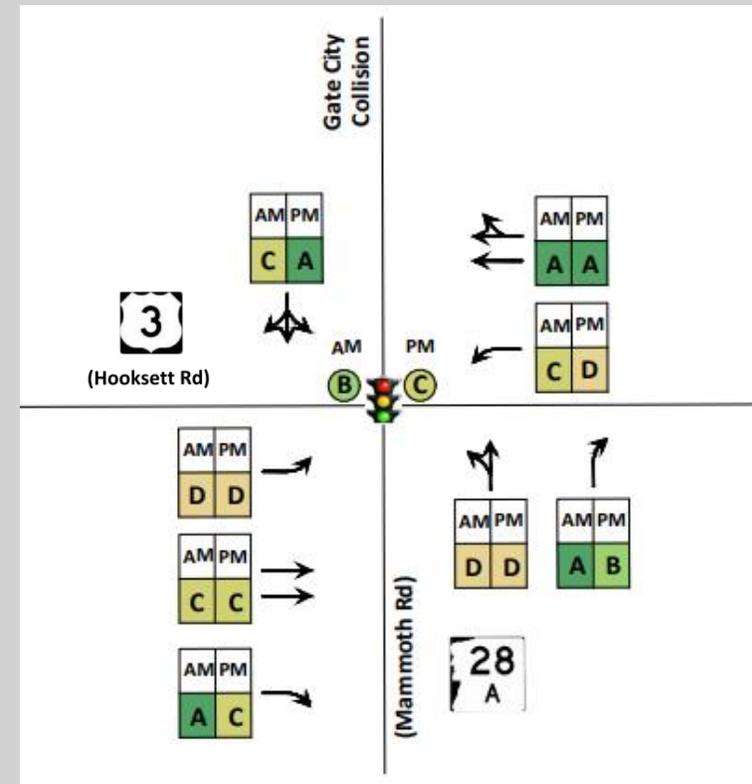
Projected Hourly Volumes (2045)
AM (PM)

The red boxes highlight the predominant traffic movements

Level of Service (LOS) – Mammoth Rd (signalized intersection)



Existing LOS (2020)



Projected LOS (2045) – w intersection modifications

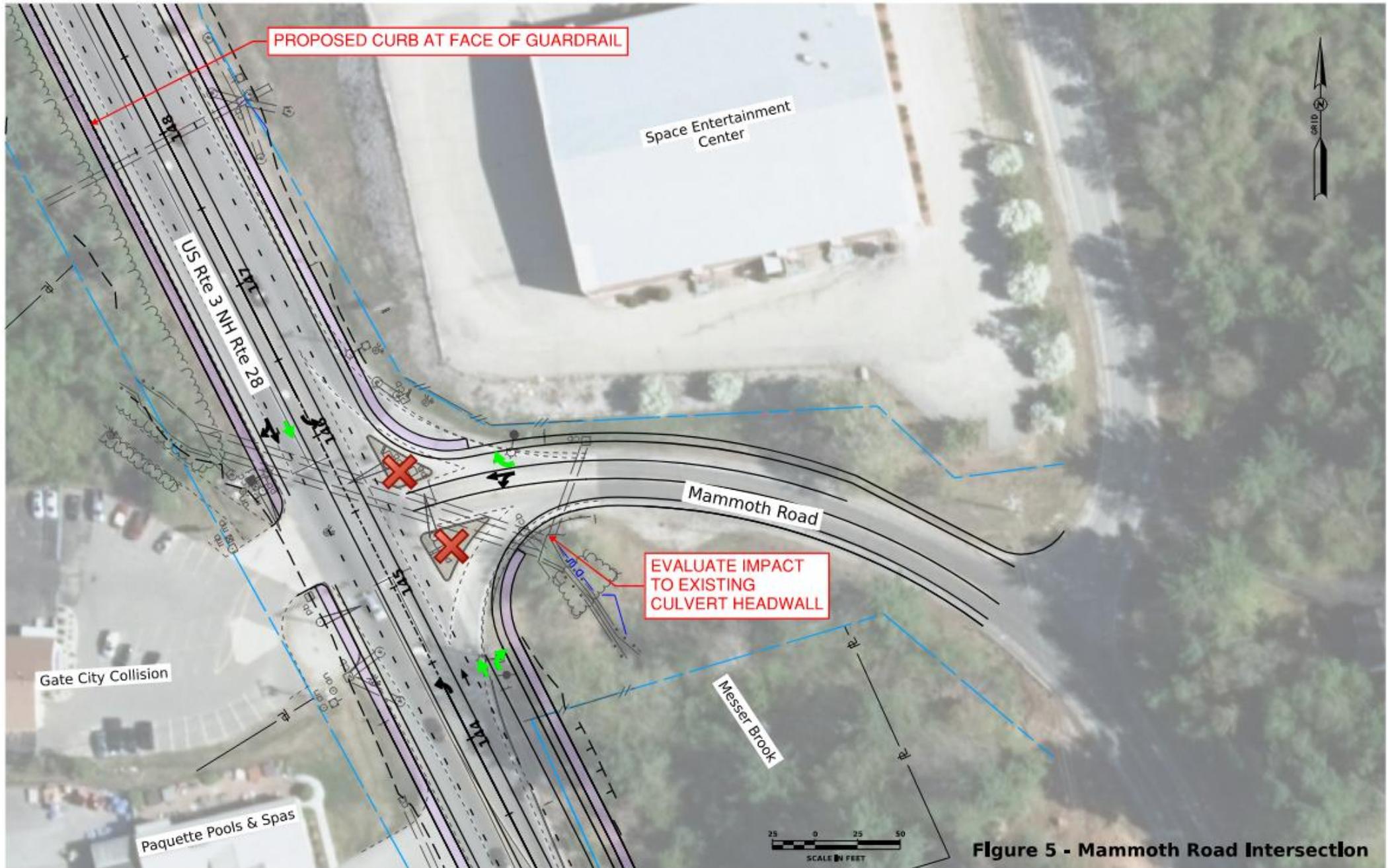


Figure 5 - Mammoth Road Intersection

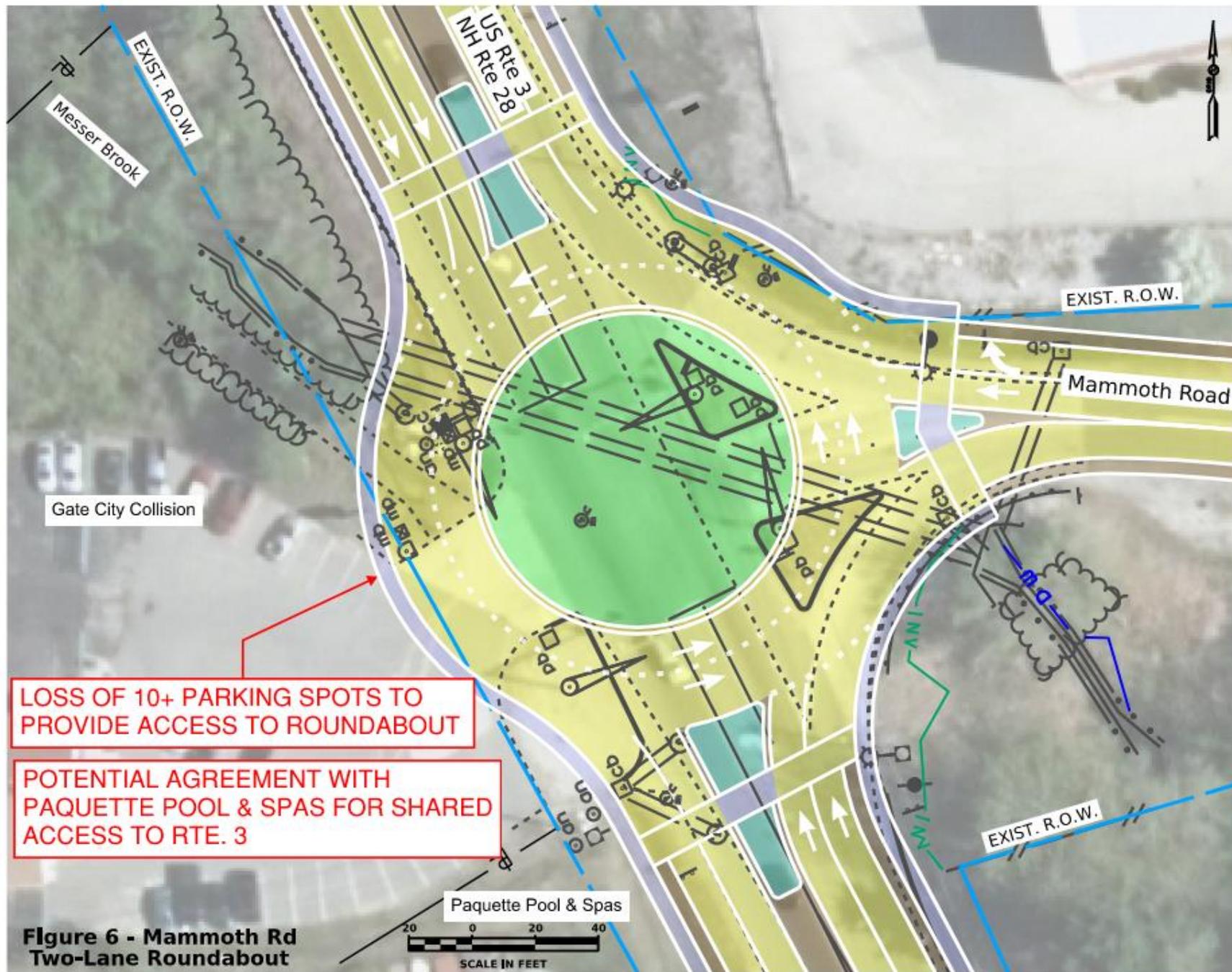
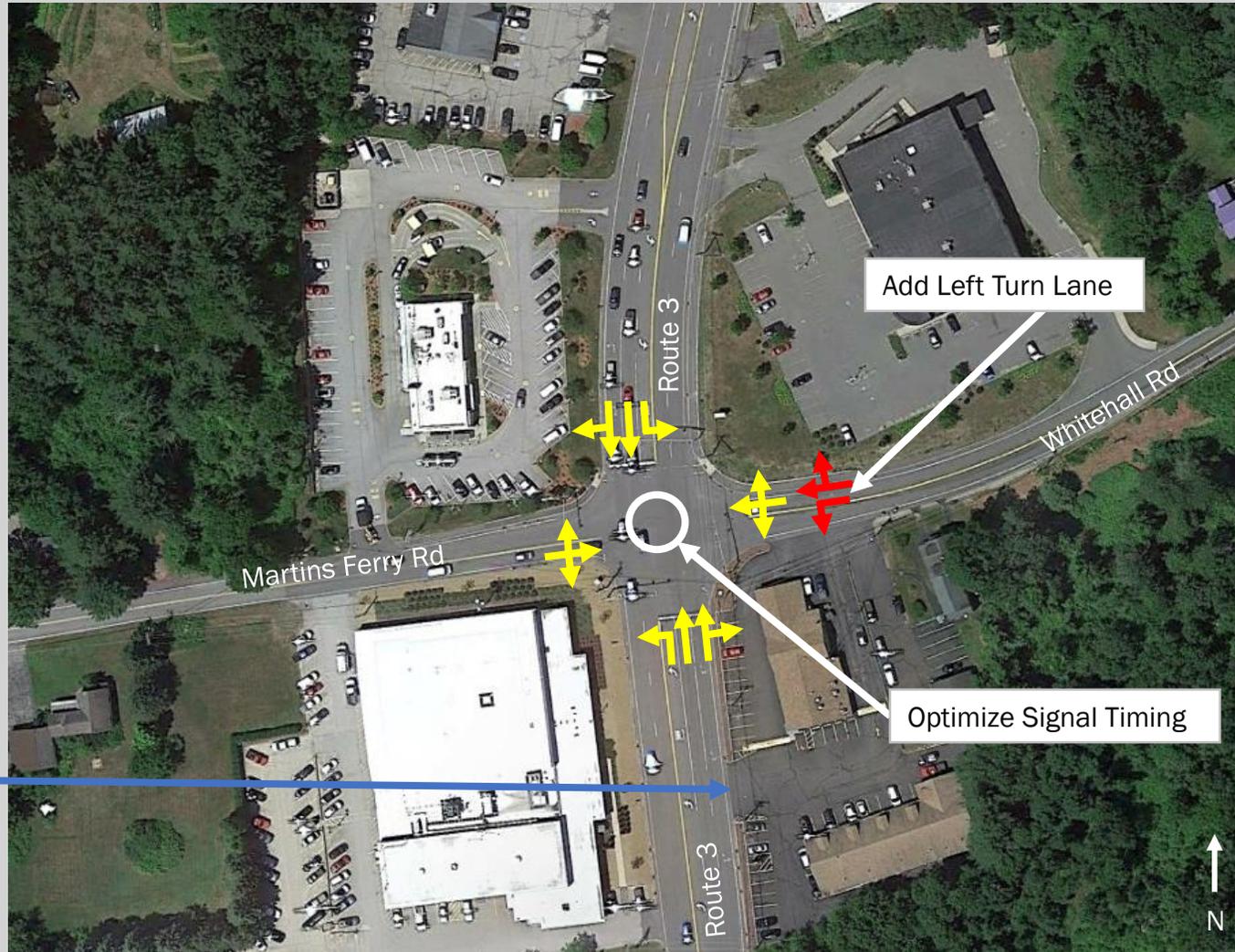


Figure 6 - Mammoth Rd Two-Lane Roundabout

Traffic Suggestions Martins Ferry Rd



Consider impact of proposed developments in the area in the traffic analysis

Review location of curb cuts for properties located in the 4 corners of the intersection

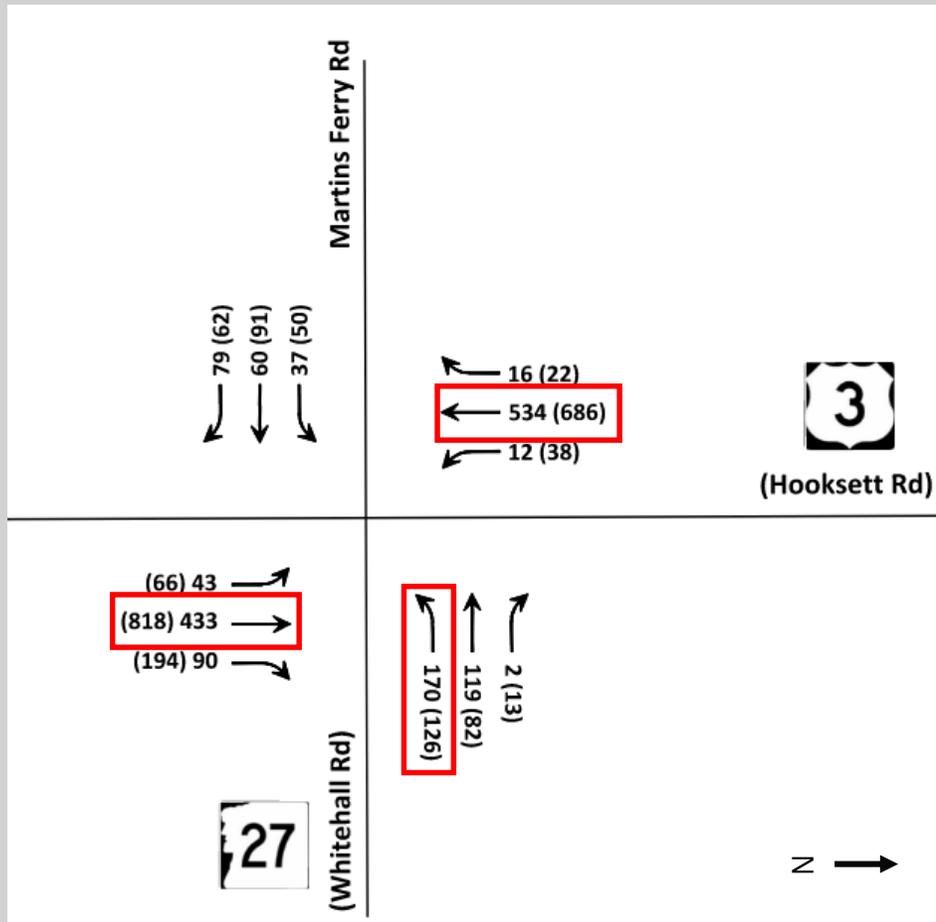
Investigate safety improvements for Southbound Rte 3 traffic turning left to Supreme Pizza property

LEGEND:

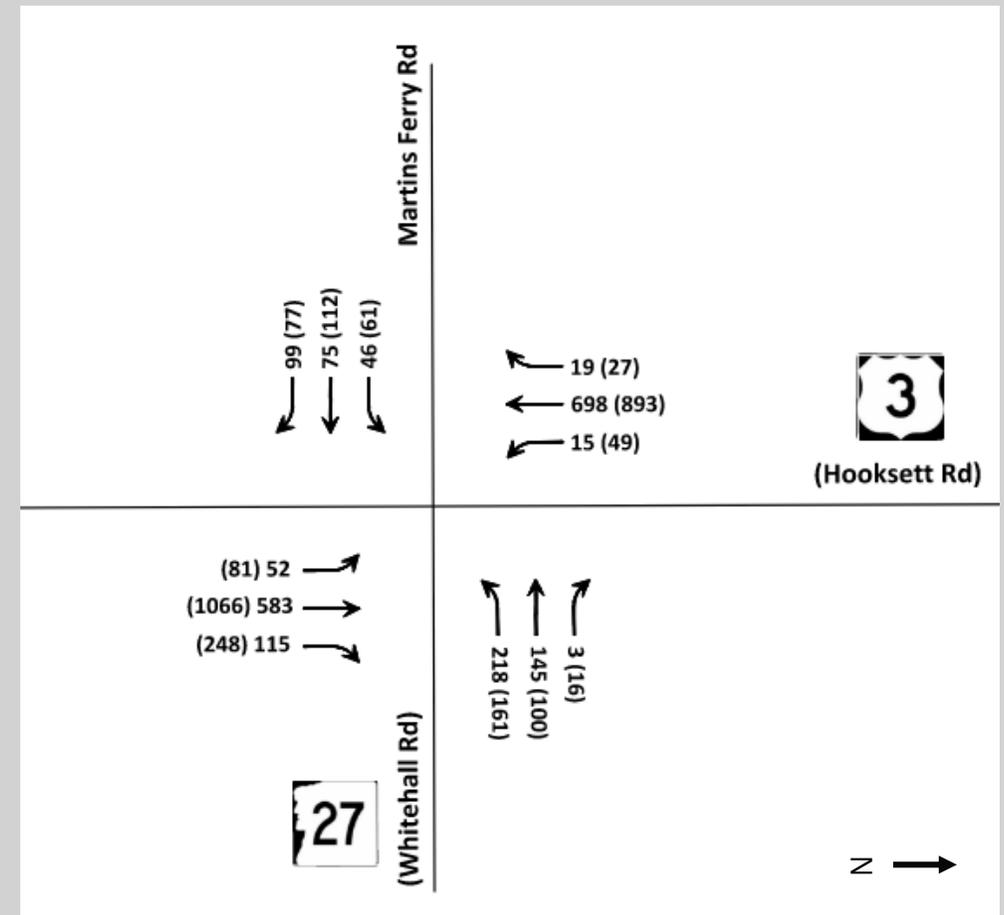
Yellow = Existing lane configuration

Red = Suggested lane modification

Traffic Volumes - Martins Ferry Rd



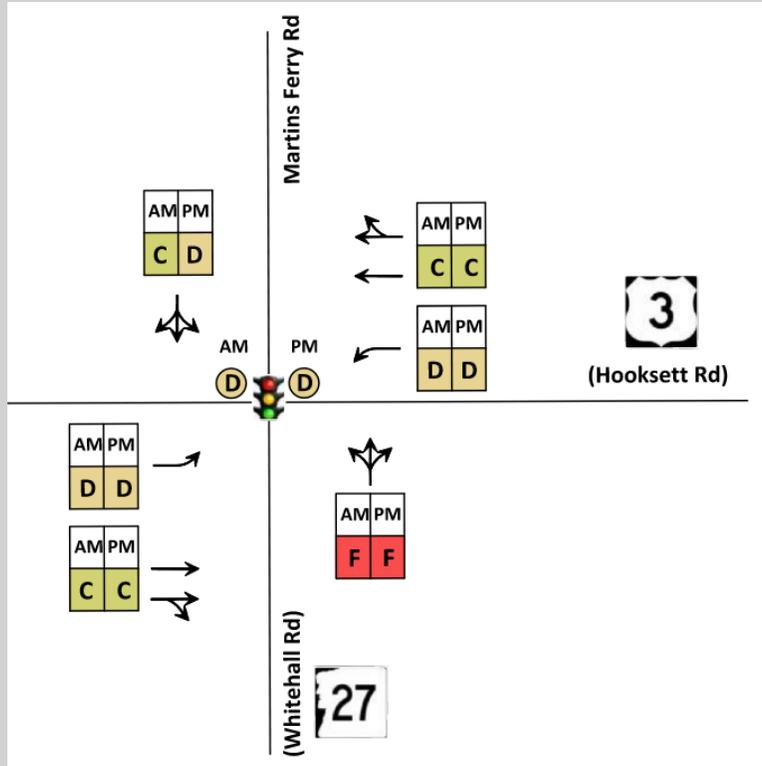
Existing Hourly Volumes
AM (PM)



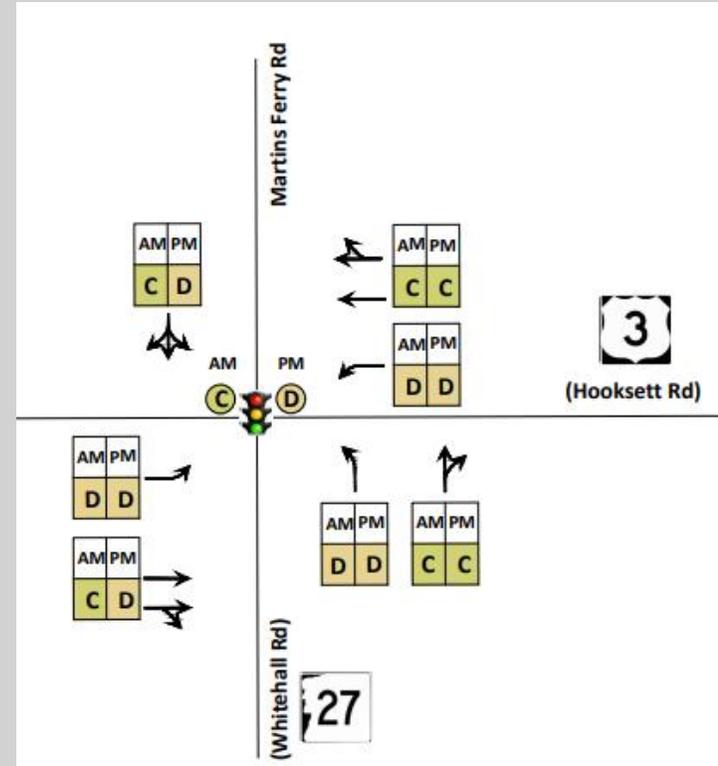
Projected Hourly Volumes (2045)
AM (PM)

The red boxes highlight the predominant traffic movements

LOS - Martin's Ferry (Signalized Intersections)



Existing LOS (2020)



Projected LOS (2045) - w intersection modifications

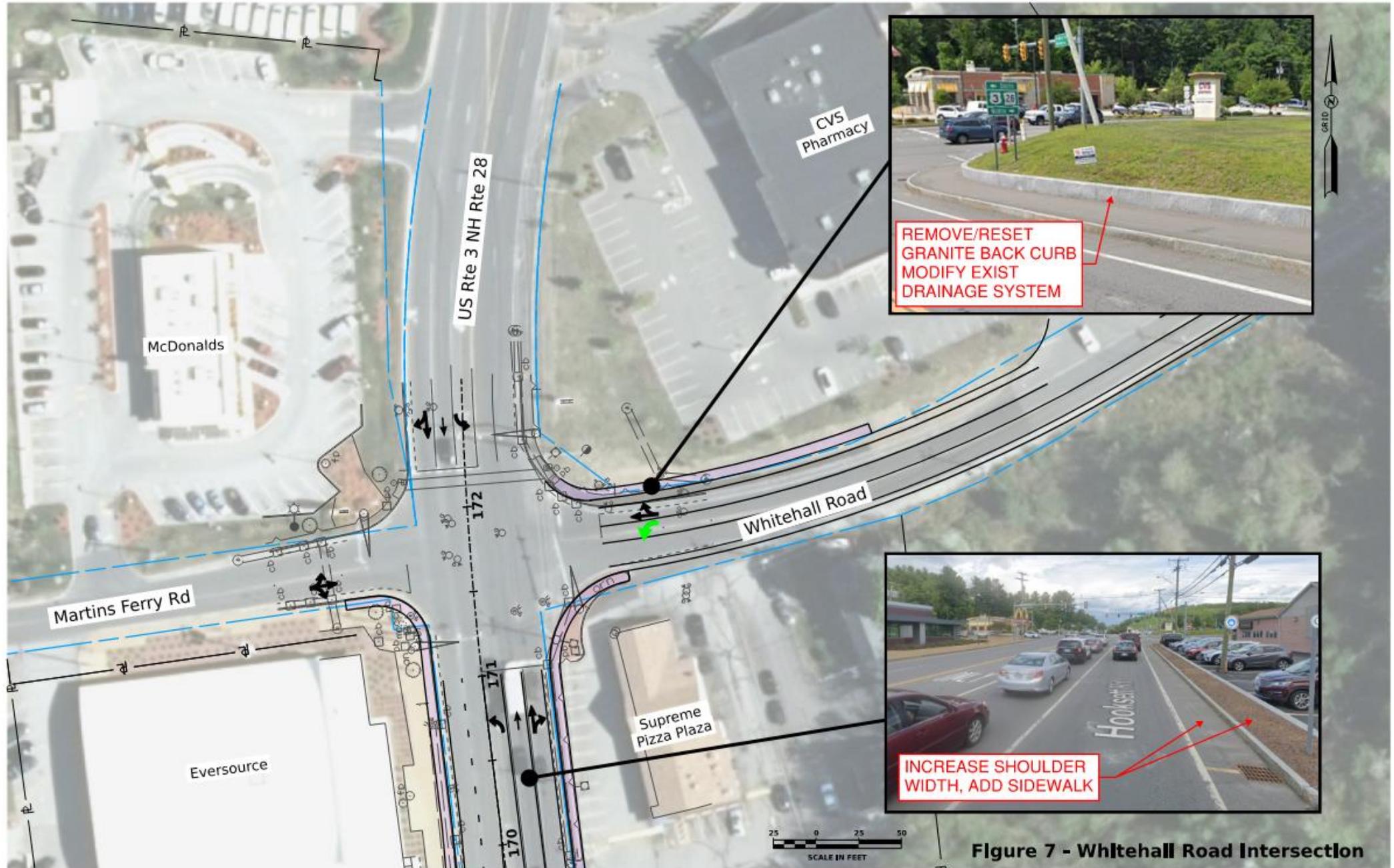


Figure 7 - Whitehall Road Intersection

Open discussion on the 3-lane alternative

- Other concerns with the 3-lane alternative?
- Is a proposed sidewalk needed along both sides for the entire length of Rte 3?
 - West side of Rte 3 from Mammoth Rd to Cinemagic is problematic
 - Crossing locations not associated with traffic signal controlled intersections will likely require Rectangular Rapid Flashing Beacon or Pedestrian Hybrid Beacon due to vehicular movement and length of crossing.



LOS Definition – Intersections / Segments

Signalized Intersections

LOS	Control Delay per vehicle (seconds per vehicle)
A	≤ 10
B	> 10-20
C	> 20-35
D	> 35-55
E	> 55-80
F	> 80

Roadway Segments

Levels of Service

FREE FLOW Low volumes and no delays.	LOS A	
STABLE FLOW Speeds restricted by travel conditions, minor delays.	LOS B	
STABLE FLOW Speeds and maneuverability closely controlled because of higher volumes.	LOS C	
STABLE FLOW Speeds considerably affected by change in operation conditions. High density traffic restricts maneuverability; volume near capacity.	LOS D	
UNSTABLE FLOW Low speeds; considerable delay; volume at or slightly over capacity.	LOS E	
FORCED FLOW Very low speeds; volumes exceed capacity; long delays with stop-and-go traffic.	LOS F	

Average Speed

≥ 35 mph

≥ 28 mph

≥ 22 mph

≥ 17 mph

≥ 13 mph

< 13 mph

Mid-segment Traffic Analysis

Segment	Direction	3-Lane Alt.				5-Lane Alt.	
		Year 2020 LOS (Existing)		Year 2045 LOS (Build)		Year 2045 LOS (Build)	
		AM Peak	PM Peak	AM Peak	PM Peak	AM Peak	PM Peak
Alice Ave to Mammoth Rd	NB	C	D	C	E	C	D
	SB	C	C	D	D	C	D
Mammoth Rd to Martins Ferry Rd	NB	C	D	C	E	C	D
	SB	C	D	D	D	D	D

Notes:

1. LOS E will be reached for the NB movement for Alice Ave – Mammoth segment by 2045
2. LOS E will be reached for the NB movement for Mammoth – Martins Ferry segment by 2035
3. LOS E for the SB movement (both segments) is not reached until 2055/2060

3-lane vs 5-lane comparison

	3-lane design	5-lane design
Right-of-Way	<ul style="list-style-type: none"> • Significant property impacts are limited to area around Embassy Ave/Mammoth Rd (identical to 5-lane); • Potential opportunities to mitigate impacts at Chantilly and Mill City Flooring • Increased pavement area will likely require other acquisitions to meet water quality (less than 5-lane) • Steep driveways for a few residential properties along east side of Rte 3 in the southern section 	<ul style="list-style-type: none"> • Most properties along the corridor are impacted • Full acquisitions likely required for some parcels • Increased pavement area will likely require other acquisitions to meet water quality • Parking loss for many commercial businesses • Steep driveways for many residential properties along east side of Rte 3 in the southern section
Environmental	<ul style="list-style-type: none"> • Best Management Practices (such as detention basins) will be needed to meet water quality requirements 	<ul style="list-style-type: none"> • Large increase in paved area will require more Best Management Practices (such as detention basins) to meet water quality requirements
Utilities	<ul style="list-style-type: none"> • Overhead electric line along east side to be relocated at least in certain sections • Other underground utility relocations will be required 	<ul style="list-style-type: none"> • Overhead electric line along east side to be relocated for the entire project length • Other underground utility relocations will be required
Construction Cost	<ul style="list-style-type: none"> • Approx. \$13M +/- (to be refined) 	<ul style="list-style-type: none"> • Approx. \$16M +/- (to be refined)

3-lane vs 5-lane comparison (continued)

	3-lane design	5-lane design
Traffic Operations	<ul style="list-style-type: none"> Lane additions at intersections will resolve most existing traffic back-ups If traffic grows at 1%/year, then Route 3 will operate at capacity by 2035 / 2045 	<ul style="list-style-type: none"> Lane additions at intersections will resolve most existing traffic back-ups No other roadway work expected for the next 30 years
Safety	<ul style="list-style-type: none"> Easier left turns across one single lane of thru traffic Slower operating speeds due to more vehicle density 	<ul style="list-style-type: none"> More difficult left turns across two lanes of thru traffic (could be mitigated with a center island to eliminate left turns) Higher operating speeds due to more fluid traffic
Public Impact during Construction	<ul style="list-style-type: none"> Shorter construction duration and less impact to abutters 	<ul style="list-style-type: none"> Longer construction duration and more impact to abutters due to larger amount of new pavement, more retaining walls, earthwork, drainage, etc.
Bike/Peds	<ul style="list-style-type: none"> Lower speeds will be more comfortable for bikes Shorter mid-block crossings 	<ul style="list-style-type: none"> Higher speeds will be more stress for bikes Longer mid-block crossings

Next steps

- Present both the 3 and 5-lane alternatives at the public information meeting to gather initial feedback
- Incorporate feedback into design alternatives
- Establish location where sidewalk is needed
- Are there other alternatives that should be developed?
- Would a survey help with the feedback on alternatives?

Next Meetings

- First Public Information Meeting
 - To be scheduled in November/December?
 - Meeting format (virtual or in-person)
- Working Group Meeting #5
 - To be scheduled in early 2022, depending on feedback from public info meeting
 - Anticipated Goals
 - Discussion of alternative rating criteria
 - Present other design alternatives and gather input
- Contact information:
Tobey Reynolds, P.E.
Tobey.L.Reynolds@dot.nh.gov
603-271-7421

Meeting Adjourned

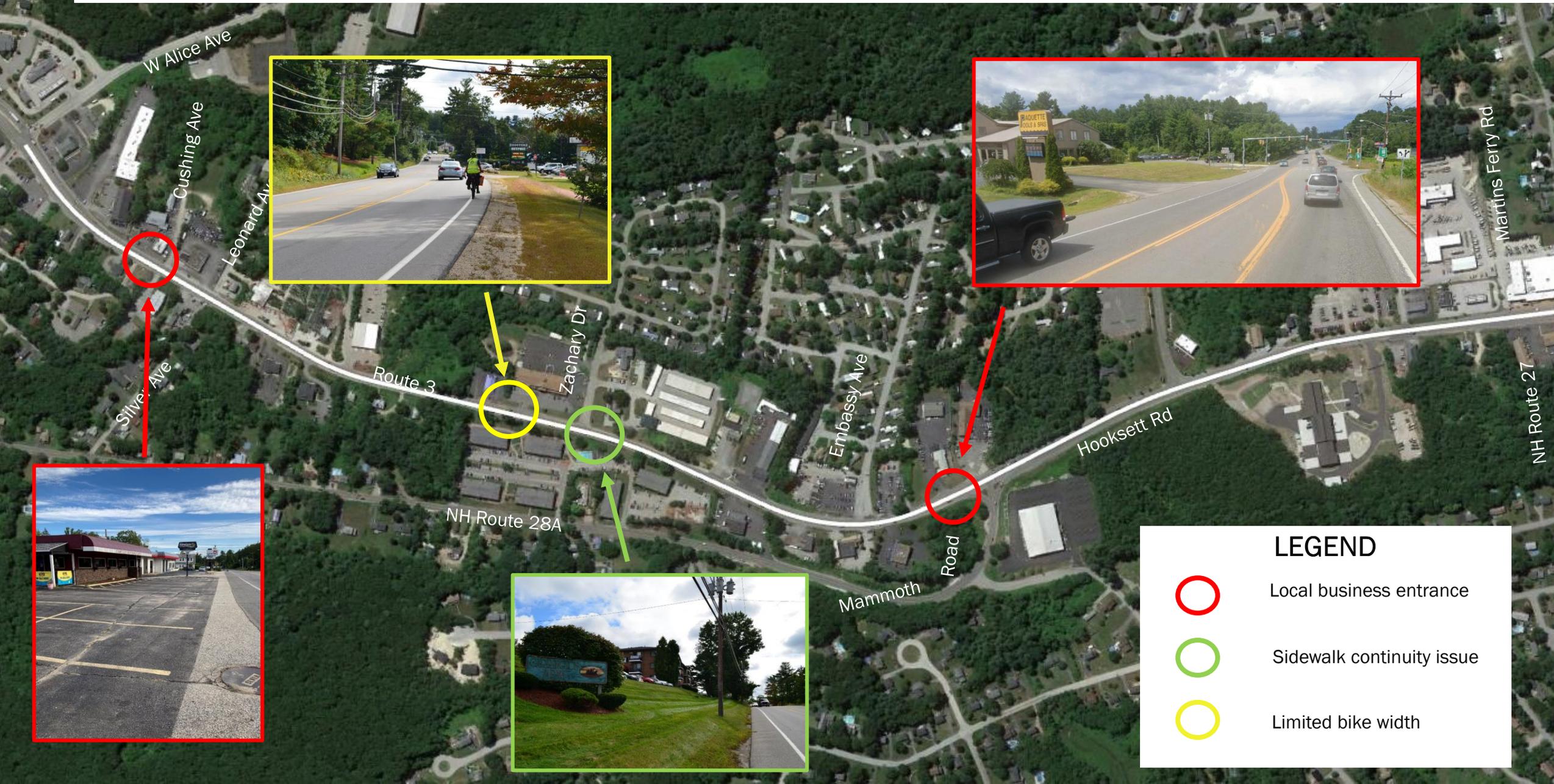
Thank you!



Mammoth Rd (Roundabout vs. Signalized Intersection)

		Two-lane Roundabout	Signalized Intersection	Remarks
Level of Service (LOS)	AM Peak	A 	B 	
	PM Peak	B 	C 	
Safety				# of crashes /year for roundabout typically up to 50% lower than signalized intersection
ROW Impacts				Roundabout has severe ROW impacts to the Gate City Collision property
Environmental Impacts				Roundabout requires reconstructing Messer Brook existing headwalls + extension of existing culvert
Aesthetics				Roundabout provides opportunity for beautification of corridor
Maintenance				Roundabout experiences less maintenance than signalized intersection
Cost				

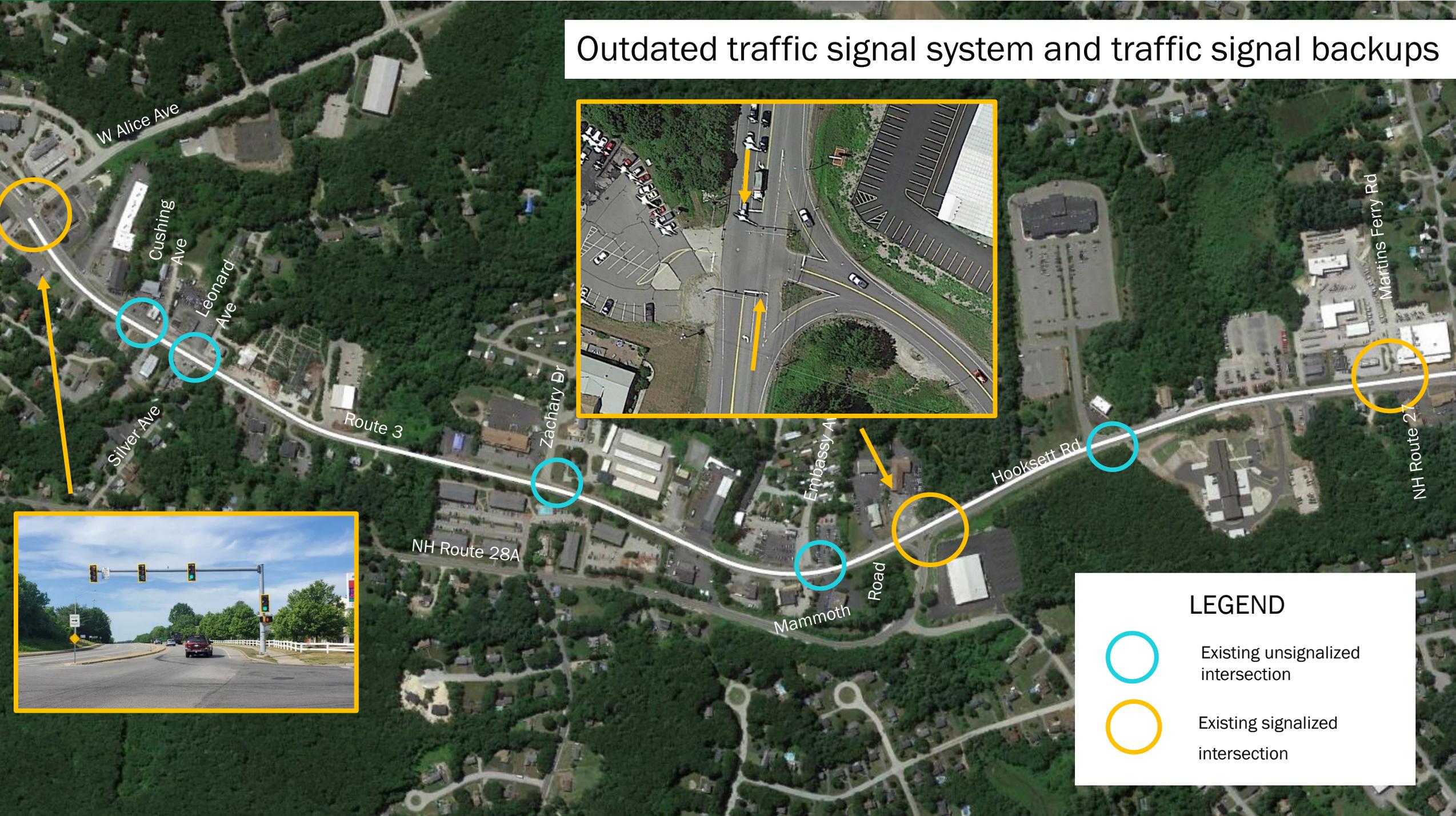
Poor access management, inadequate bike lane width and lack of sidewalk access and continuity



LEGEND

-  Local business entrance
-  Sidewalk continuity issue
-  Limited bike width

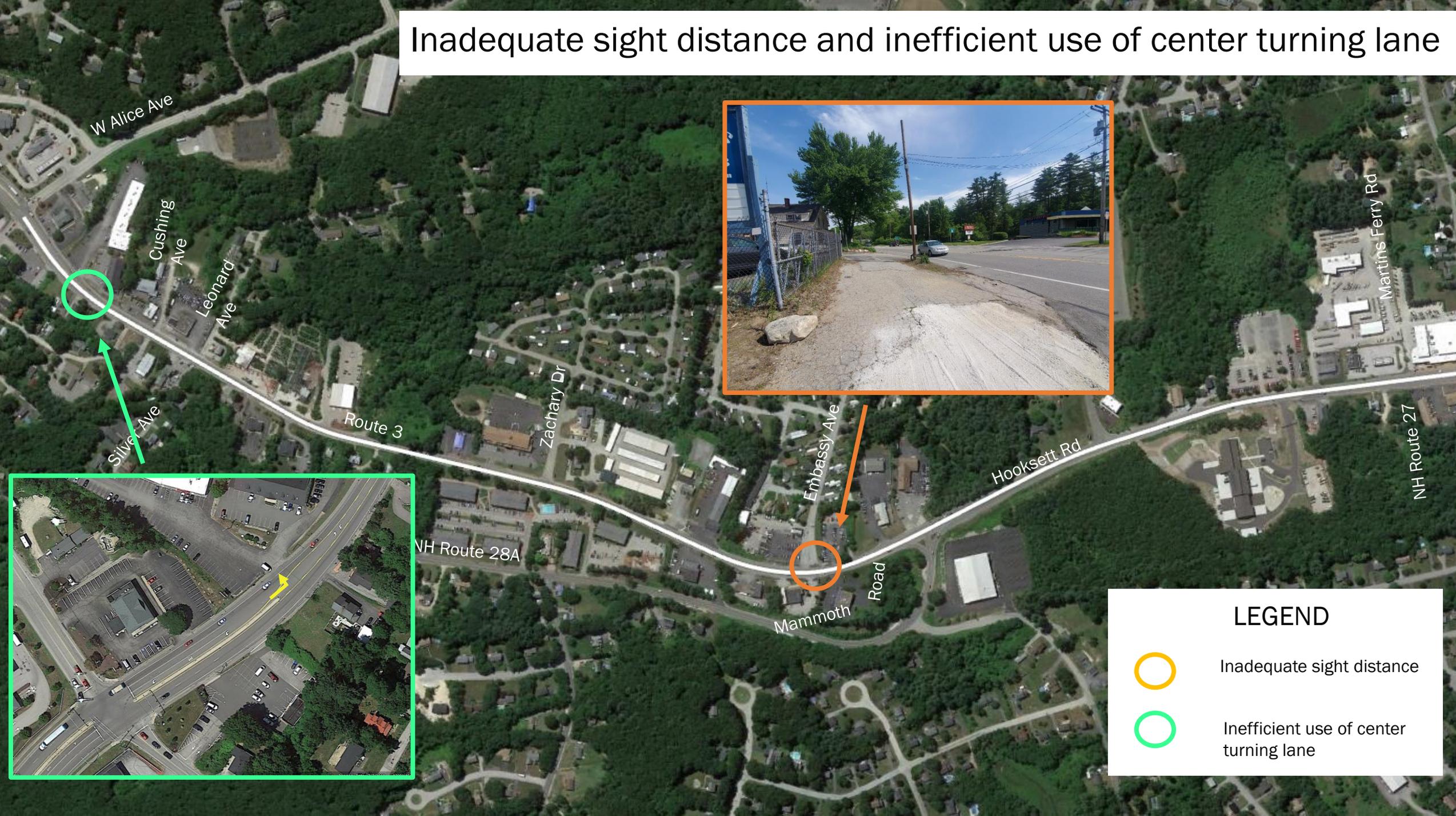
Outdated traffic signal system and traffic signal backups



LEGEND

-  Existing unsignalized intersection
-  Existing signalized intersection

Inadequate sight distance and inefficient use of center turning lane



LEGEND

-  Inadequate sight distance
-  Inefficient use of center turning lane